ABSTRACT:

Tanjung Bin power station is one of the four coal power plants in Malaysia, producing180 tons/day of bottom ash and 1,620 tons/day of fly ash from 18,000 tons/day of coal burning. This paper focuses on the some engineering properties of coal ash (fly ash and bottom ash) from Tanjung Bin power station (e.g. grain size, specific gravity, compaction, shear strength, permeability and compressibility). In addition, morphology, mineralogy and chemistry of coal ash are studied using scanning electron microscope (SEM), x-ray diffraction (XRD and x-ray fluorescence (XRF). Tanjung Bin coal ashes were compacted at 95% of optimum moisture content, sealed and cured for 0, 7, and 28 days before they were analyzed for morphological and mineralogical analyses. Morphological analysis showed that the number of irregular shaped particles increased confirming change in material type with curing period. From mineralogical analysis, the crystalline compounds present in Tanjung Bin coal ash were quartz, mullite, magnetite, hematite, and calcium oxide. From chemical analysis, Tanjung Bin fly ash is classified as class F in which fly ash has low lime, less than 10%. Its low specific gravity, freely draining nature, ease of compaction, good frictional properties, high shear strength and low compressibility can be gainfully exploited in the construction of embankments, roads, reclamation and fill behind retaining structures.